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## NOTICE OF ALLOWANCE AND FEE(S) DUE

20988 7590 02/01/2010

OGILVY RENAULT LLP  
1, Place Ville Marie  
SUITE 2500  
MONTREAL, QC H3B 1R1  
CANADA

EXAMINER

HUYNH, NAM TRUNG

ART UNIT

PAPER NUMBER

2617

DATE MAILED: 02/01/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/760,424

01/21/2004

Jianglei Ma

13528-285US

1236

TITLE OF INVENTION: PHYSICAL LAYER STRUCTURES AND INITIAL ACCESS SCHEMES IN AN UNSYNCHRONIZED COMMUNICATION NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	05/03/2010

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE  
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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20988 7590 02/01/2010

**Ogilvy Renault LLP**  
1, Place Ville Marie  
SUITE 2500  
MONTREAL, QC H3B 1R1  
CANADA

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/760,424 01/21/2004 Jianglei Ma 13528-285US 1236

TITLE OF INVENTION: PHYSICAL LAYER STRUCTURES AND INITIAL ACCESS SCHEMES IN AN UNSYNCHRONIZED COMMUNICATION NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1510 \$300 \$0 \$1810 05/03/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
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HUYNH, NAM TRUNG 2617 370-350000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,424	01/21/2004	Jianglei Ma	13528-285US	1236
20988	7590	02/01/2010	EXAMINER	
OGILVY RENAULT LLP 1, Place Ville Marie SUITE 2500 MONTREAL, QC H3B 1R1 CANADA			HUYNH, NAM TRUNG	
			ART UNIT	PAPER NUMBER
			2617	
			DATE MAILED: 02/01/2010	

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 854 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 854 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/760,424	MA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	NAM HUYNH	2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 7/28/09.
2. ☒ The allowed claim(s) is/are 1,3,6,7,9,10,34,35,37-39 and 43-46.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____.</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____.</li> </ol> |
|--|---|

/George Eng/  
Supervisory Patent Examiner, Art Unit 2617

## **DETAILED ACTION**

### ***Response to Amendment***

This office action is in response to amendment filed on 7/28/09. Of the previously presented claims 1, 3, 6, 7, 9, 10, 34, 35, 37-39, and 43-46; no amendments were made.

### **EXAMINER'S AMENDMENT**

Authorization for this examiner's amendment was given in a telephone interview with Michael Van Eesbeek (Reg. No. 61,951) on 12/8/09. The current listing of claims filed on 7/28/09 has been misnumbered incorrectly and do not match the previous listing filed 12/3/08. Accordingly this amendment corrects the numbering.

#### **Claims**

1. A method of transmitting information in an unsynchronized Orthogonal Frequency Division Multiplexing (OFDM) communication network comprising a plurality of base stations, the method comprising:

modulating access channel information onto a predetermined initial access channel of an OFDM communications signal, wherein the access channel information comprises a common synchronization code that is common to each of the plurality of base stations and a cell-specific synchronization code that is orthogonal to the common synchronization code and unique to each base station, and wherein the initial access channel comprises a predetermined set of one or more time-continuous signal

components of the OFDM communications signal, each time-continuous signal component being carried by a respective sub-carrier;

and transmitting the communication signal.

2. [Previously Cancelled]

3. The method of claim 1, wherein the common synchronization code comprises a complex PN (pseudo noise) sequence known to communication terminals configured for accessing the communication network.

4. [Previously Cancelled]

5. [Previously Cancelled]

6. The method of claim 1, wherein the communication signal further comprises a scattered pilot channel, and wherein the method further comprises modulating a selected one of the common synchronization code and the cell-specific synchronization code to the scattered pilot channel.

7. The method of claim 1, wherein each time-continuous signal component of the communication signal is associated with a respective frequency index, and wherein the frequency indexes associated with the time-continuous signal components of the initial access channel are separated by a power of 2.

8. [Previously Cancelled]

9. The method of claim 6, wherein the scattered pilot channel is pair-wise scattered onto sub-carriers having a common sub-carrier index in pairs of consecutive OFDM symbols.

10. The method of claim 1, wherein the access channel information comprises a 3GPP (3rd Generation Partnership Project) PSC (Primary Synchronization Code), a 3GPP SSC (Secondary Synchronization Code) sequence, and a 3GPP primary scrambling code.

11- ~~30~~ 33. [Previously Cancelled]

~~34~~ 34. A method of transmitting information in an unsynchronized Orthogonal Frequency Division Multiplexing (OFDM) communication network comprising a plurality of base transceiver stations, the method comprising:

modulating a cell-specific synchronization code uniquely associated with a selected one of the plurality of base transceiver stations onto a scattered pilot channel of an OFDM communication signal;

modulating access channel information to a predetermined initial access channel of the OFDM communications signal, wherein the access channel information comprises the cell-specific synchronization code and a common synchronization code that is orthogonal to the cell-specific synchronization code and common to each of the plurality of base transceiver stations, and wherein the initial access channel comprises a predetermined set of one or more time-continuous signal components of the OFDM communications signal, each time-continuous signal component being carried by a respective sub-carrier; and

transmitting the communication signal.

~~32~~ 35. The method of claim 34, further comprising:

receiving the communication signal at a communication terminal;

extracting data from the scattered pilot channel;  
searching for the cell-specific synchronization code in the data extracted from the scattered pilot channel; and  
performing fine timing and frequency synchronization operations at the communication terminal when the cell-specific synchronization code is found in the data extracted from the scattered pilot channel.

~~33~~ **36**. [Previously Cancelled]

~~34~~ **37**. The method of claim 34, wherein the common synchronization code comprises a primary synchronization code (PSC) and a secondary synchronization code (SSC), and the cell-specific synchronization code comprises a scrambling code.

~~35~~ **38**. The method of claim ~~34~~ **37**, wherein the PSC, the SSC and a first portion of the scrambling code are mapped to the initial access channel, and a second portion of the scrambling code is mapped to the scattered pilot channel.

~~36~~ **39**. The method of claim ~~34~~ **37**, wherein the PSC is mapped to the initial access channel, and the SSC and the scrambling code are mapped onto the scattered pilot channel.

~~37~~ **40**. [Previously Cancelled]

~~38~~ **41**. [Previously Cancelled]

~~39~~ **42**. [Previously Cancelled]

~~40~~ **43**. A base transceiver station in an unsynchronized Orthogonal Frequency Division Multiplexing (OFDM) communication network comprising a plurality of base transceiver stations, the base transceiver station comprising:



a. a processor configured to map access channel information to a predetermined initial access channel of an OFDM communications signal, wherein the access channel information comprises a common synchronization code that is common to all of the base transceiver stations in the network and a cell-specific synchronization code that is orthogonal to the common synchronization code and unique to the base transceiver station, and wherein the initial access channel comprises a predetermined set of one or more time-continuous signal components of the OFDM communications signal, each time-continuous signal component being carried by a respective sub-carrier; and

b. an output configured to transmit the communication signal.

~~41~~ **44**. The base transceiver station of claim ~~40~~ **[43]**, wherein the output is configured to be connected to at least one antenna.

~~42~~ **45**. A communication terminal comprising:

an input configured to receive an OFDM communication signal; and

a processor configured to search the received signal for predetermined access channel information in an initial access channel corresponding to a predetermined set of one or more time-continuous signal components of the OFDM communications signal, each time-continuous signal component being carried by a respective sub-carrier, and to determine synchronization parameters based on a location of the access channel information in the initial access channel;

wherein the access channel information comprises a common synchronization code that is common to each of the plurality of base stations and a cell-specific

synchronization code that is orthogonal to the common synchronization code and unique to each base station.

43 **46**. The communication terminal of claim 42 **[45]**, further comprising:

- c. a memory for storing the synchronization channel information,
- d. wherein the processor is further configured to retrieve the access channel information from the memory.

44 **47**. [Previously Cancelled]

***Allowable Subject Matter***

- 1. Claims 1, 3, 6, 7, 9, 10, 34, 35, 37-39, and 43-46 are allowed.
- 2. The following is an examiner's statement of reasons for allowance:

The invention of the present application pertains to physical layer structures and initial access schemes in an unsynchronized network. With respect to independent claim 1, the novelty of the invention lies in the access channel information that is modulated onto an initial access channel of an OFDM communications signal. The claim requires that the access channel information comprises a common synchronization code that is common to a plurality of base stations and a cell-specific synchronization code that is orthogonal to the common synchronization code and unique to each base station. The claim also requires that the initial access channel comprises a predetermined set of one or more time-continuous signal components of the OFDM communications signal, each time- continuous signal component being

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carried by a respective sub-carrier. These limitations in combination with the remaining limitations are not taught nor suggested by the prior art.

The closest prior art not on record is Bohnke (US 6,567,383). Bohnke discloses a header structure for a TDD system which preferably uses an OFDM transmission system (abstract). Bohnke teaches that a downlink channel of a base station comprises a synchronization channel that is transmitted in every frame (column 4, lines 3-18). However, Bohnke does not teach or suggest that the downlink structure comprises a common synchronization code and a cell-specific synchronization code and structure of the initial access channel as required by independent claim 1.

Accordingly, independent claim 1 and independent claims 34, 43, and 45 that recite similar subject matter are allowable for these reasons and the reasons set forth in Applicant's response filed on 7/28/09.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAM HUYNH whose telephone number is (571)272-5970. The examiner can normally be reached on 8 a.m.-5 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George Eng/  
Supervisory Patent Examiner, Art Unit 2617

/Nam Huynh/  
Examiner, Art Unit 2617